

## WHAT IS CLAIMED IS:

1. A friction disc for a brake assembly comprising:  
an annular structural core having at least one sinusoidally-shaped mounting surface; and  
5        at least one frictional lining element having a sinusoidally-shaped mounting surface and a relatively, flat wear surface, said mounting surface of each frictional lining element matingly engaging said mounting surface of said structural core.
2. The friction disc according to claim 1, wherein said annular  
10       structural core is formed from strength-optimized carbon-carbon composite.
3. The friction disc according to claim 1, further comprising drive lugs on an inner diameter of said structural core for mounting to a torque tube of the brake assembly.
- 15       4. The friction disc according to claim 1, further comprising drive lugs on an outer diameter of said structural core for mounting to a wheel.
5. The friction disc according to claim 1, wherein each friction lining element is formed from friction optimized carbon-carbon composite.
- 20       6. The friction disc according to claim 1, further comprising at least one mechanical fastener securing each friction lining element to said structural core.
7. The friction disc according to claim 2, wherein each friction lining element is formed from friction-optimized carbon-carbon composite.
- 25       8. The friction disc according to claim 7, wherein said friction disc is a stator disc, rotor disc, backing plate disc or pressure plate disc.

9. The friction disc according to claim 2, wherein each wear surface includes a thermal barrier coating.

10. A friction disc for a brake assembly comprising:  
an annular structural core having at least one mounting surface  
5 having a plurality of recesses; and  
at least one frictional lining element having a mounting surface and a relatively flat wear surface, said mounting surface of each frictional lining element having a plurality of dimples formed for matingly engaging said plurality of recesses of said structural core.

10 11. The friction disc according to claim 10, wherein said annular structural core is formed from strength-optimized carbon-carbon composite.

12. The friction disc according to claim 10, further comprising drive lugs on an inner diameter of said structural core for mounting to a torque tube of the brake assembly.  
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13. The friction disc according to claim 10, further comprising drive lugs on an outer diameter of said structural core for mounting to a wheel.

14. The friction disc according to claim 10, wherein each friction lining element is formed from friction optimized carbon-carbon composite.  
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15. The friction disc according to claim 10, further comprising at least one mechanical fastener securing each friction lining element to said structural core.

16. The friction disc according to claim 11, wherein each friction lining element is formed from friction optimized carbon-carbon composite.  
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17. The friction disc according to claim 16, wherein said friction disc is a stator disc, rotor disc, backing plate disc or pressure plate disc.